भारतीय मानक
Indian Standard

IS 12821 : 2017

(Reaffirmed 2022)

स्वचन वाहन — ब्रेक प्रणाली, नली संयोजन — आयाम

(पहला पुनरीक्षण)

Automotive Vehicles — Braking System, Tube Connections — Dimensions

(First Revision)

ICS 43.040.40; 83.160

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Automotive Braking and Steering System, Vehicle Testing and Performance Evaluation Sectional Committee, TED 4

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Automotive Braking and Steering System, Vehicle Testing and Performance Evaluation Sectional Committee had been approved by the Transport Engineering Division Council.

This standard was first published in 1989. The revision of this standard has been taken up to update the standard with latest technological developments.

In the formulation of this standard considerable assistance has been derived from the following:

ISO 4038 : 1996	Road vehicles — Hydraulic braking systems — Simple flare pipes, tapped holes, male fittings and hose end fittings issued by the International Organization for Standardization
SAE J 1290 : 1989	Automotive hydraulic braking systems — Metric tube connections issued by the Society of Automotive Engineers, USA

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of specified value in the standard.

Indian Standard

AUTOMOTIVE VEHICLES — BRAKING SYSTEM, TUBE CONNECTIONS — DIMENSIONS

(First Revision)

1 SCOPE

1.1 This standard covers the recommended dimensions of tubing with flared ends used in hydraulic brake systems of automotives.

1.2 This standard does not preclude other details where required for any other applications.

2 TUBING AND FLARES

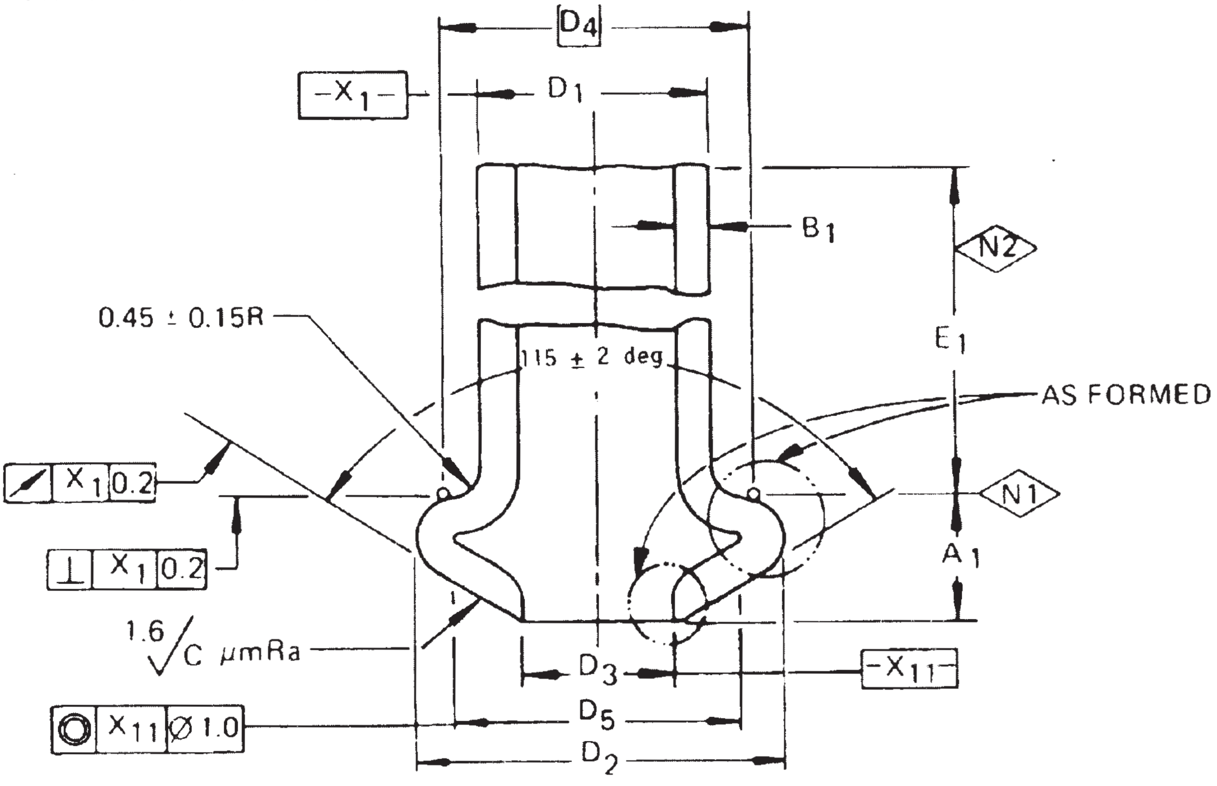
2.1 Tubing and tubing end flares shall be as per dimensions shown in Table 1 and Table 2.

Table 1 Dimensions and Tolerances for Tubing and End Flares

(*Clause* 2.1)

All dimensions in millimetres.

Geometrical form tolerance



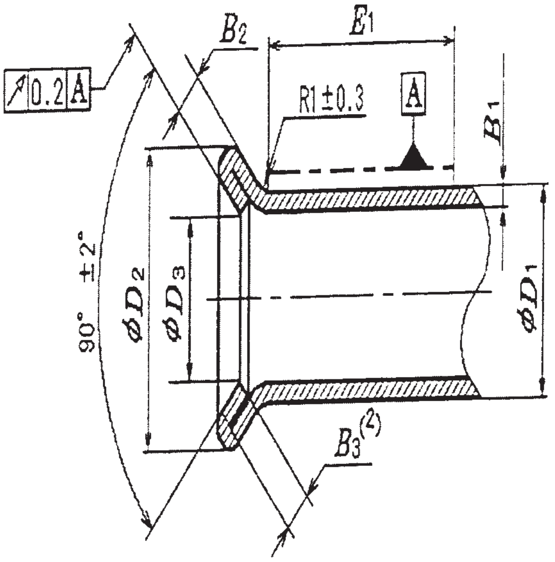
D_1		***D_2***	***D_3***	***D_4***	***D_5***	***A_1***	***B_1***	***E_1***
Bare Tube φ ± 0.07	Coated Tube φ *Max*	±0.18	+0.3 −0.2		*Min*	± 0.3	± 0.07	*Min*
4.75	4.87	7.1	3.2	6.0	5.5	2.5	0.70	16
6.00	6.12	8.4	4.5	7.3	6.8	2.5	0.70	18
6.35	6.57	8.8	4.8	7.6	6.3	2.5	0.70	18
8.00	8.12	10.7	6.5	9.3	8.8	2.7	0.70	24
10.00	10.12	12.7	8.5	11.3	10.8	3.0	0.70	28

Table 2 Dimensions of End Flares (Double Ended)

(*Clause* 2.1)

All dimensions in millimetres.

Geometrical form tolerance



Nominal Size D_1	B_1 ± 0.07	B_2 ± 0.02	B_3 *Min*	D_2 ± 0.03	D_3 ± 0.35	E_1 *Min*
4.75	0.7	1.4	1	6.9	3.35	19
6				8.4	4.55	21
6.35				8.85	4.85	
8			1.6	10.8	6.55	
10				13.3	8.55	

NOTE — B_3 shows minimum seal length.

3 THREADED PORTS (TUBE NUTS)

3.1 Threaded ports for disc brake calipers, drum brake wheel cylinders, combination valves, pressure switches, metering valves and other brake circuit components shall be as per dimensions shown in Table 3.

3.2 Dimensions and tolerances for threaded ports for tube nuts (double flare) shall be as given in Table 4.

4 MALE TUBE NUTS (FITTINGS)

4.1 Male tube nuts shall be as per dimensions shown in Table 5.

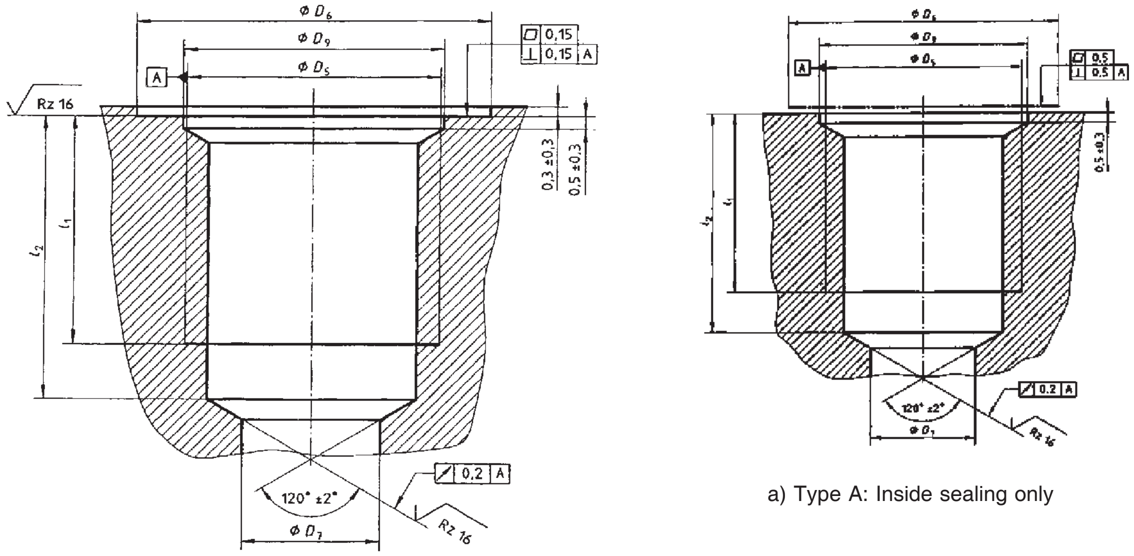
4.2 Dimensions and tolerances for male tube nuts (double flare) shall be as given in Table 6.

Table 3 Dimensions of Tapped Holes for Cone Sealing

(*Clause* 3.1)

All dimensions in millimetres.

Dimensions in millimetres
Roughness values is micrometres



a) Type A: Inside sealing only

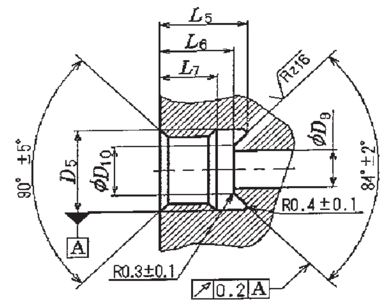
b) Type B: Inside and Outside sealing

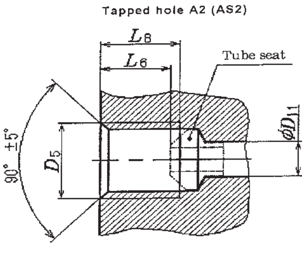
Tube Diameter **D** nom	D_5 6H	D_6 *Min*	D_7 0 -0.4	D_8 ref.	D_9 ±0.2	l_1 *Min*	l_2 ± 0.25
4.75	M10×1	16.0	3.3	10.5	10.2	7.5	10.0
6.0	M12×1	18.0	4.6	12.5	12.2	9.5	12.0
6.35	M12×1	18.0	4.6	12.5	12.2	9.5	12.0
8.0	M14×1.5	20.0	6.6	14.5	14.2	13.25	16.5
10.0	M16×1.5	22.0	8.6	16.5	16.2	14.25	17.5

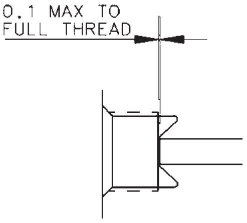
Table 4 Dimensions and Tolerances for Threaded Ports for Tube Nut (Double Flare)

(*Clause* 3.2)

All dimensions in millimetres.





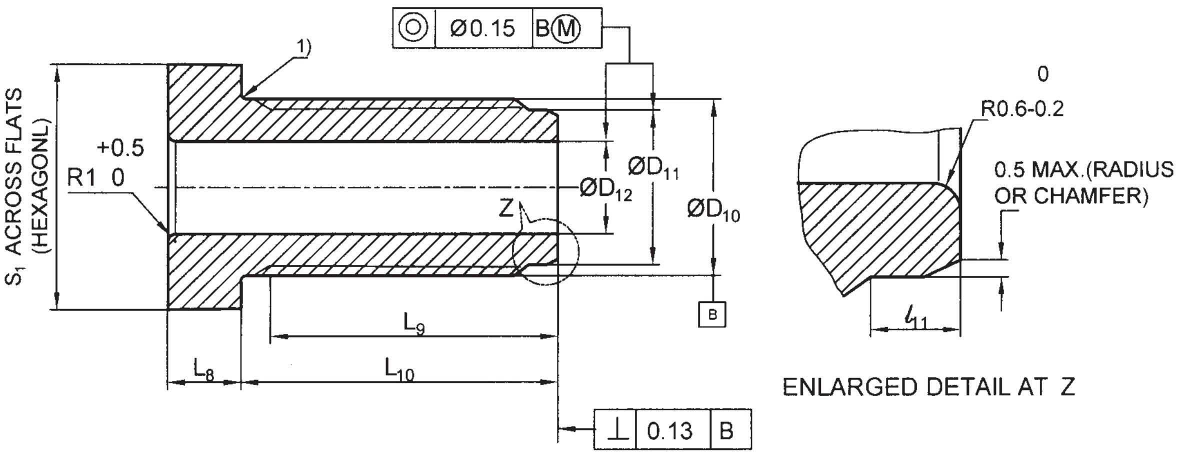


D_5 6H	D_5 6H	D_9 0 -0.4	D_{10} ±0.3	D_{11} +0.15 +0.05	L_5	L_6 ±0.5	L_7 *Min*	L_8 *Max*
4.75	M10×1	3.2	3.8	5.0	9.5	7.5	6.0	8.5
6.0	M12×1	4.1	5.0	-	9.5	7.5	6.0	8.5
6.35	M12×1	4.5	5.3	6.4	9.5	7.5	6.0	8.5
8.0	M14×1.5	5.5	6.8	7.6	11.5	9.5	8.0	10.5
10.0	M16×1.5	7.5	8.8	9.5	11.5	9.5	8.0	10.5

Table 5 Dimensions and Tolerances of Male Tube Nut

(*Clause* 4.1)

All dimensions in millimetres.



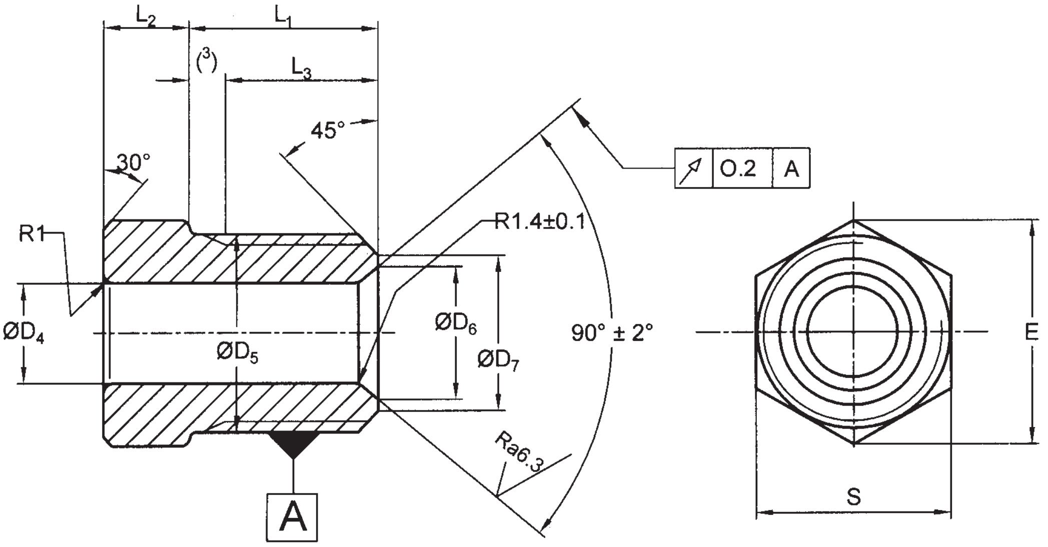
1) THROAT OPTIONAL Ø MIN =D_n

Tube Diameter *D* nom	D_{10} 6g	D_{11} 0- 0.2	D_{12} +0.2 0	S_1 h13	l_8 +1.5 0	l_9 *Min*	l_{10} js14	l_{11} +0.5 0
4.75	M10×1	8.4	5.05	11.0	4.0	10.0	12.5	2.3
6.0	M12×1	10.4	6.3	12,13	5.0	12.5	15.0	2.3
6.35	M12×1	10.4	6.65	12,13	5.0	12.5	15.0	2.3
8.0	M14×1.5	11.7	8.3	14.0	5.0	17.0	20.5	3.3
10.0	M16×1.5	13.7	10.3	17.0	5.0	18.0	21.5	3.3

Table 6 Dimensions and Tolerances of Male Tube Nut (Double Flare)

(*Clause* 4.2)

All dimensions in millimetres.



NOTE — (3) Under cutting at portion (a) depends on manufacturing method.

D_1 (4) Nominal Size	D_4 (5) +0.15 0	D_6 6g	D_6 +0.1 0	D_7 ±0.2	L_1 ±0.2	L_2	L_3 *Min*	S		E for Reference
								Nominal Size	Tolerance	
4.47	4.98	M10×1	6.8	7.8	11	5	9	10	0 -0.22	11.5
6.0	6.24	M12×1	8.0	9.4	11	6	9	12	0 -0.27	13.9
6.35	6.59	M12×1	8.4	9.4	11	6	9	12		13.9
8	8.29	M14×1.5	10.4	11.4	14.5	6	11.5	14		16.2
10	10.29	M16×1.5	12.4	13.4	14.5	8	11.5	17		19.6

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Amendments Issued Since Publication

Amendment No.	Date of Issue	Text Affected

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